



DØ Collaboration Meeting Closing Remarks

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February 14, 2003**

February 14, 1929
2122 N. Clark St., Chicago



Impressions of the week

- The old story:
 - There's good news and there's bad news.
- We can be proud of our achievements over the last few months, but we can't deny that we need to do better in many areas
- A full auditorium at 8.00am is a good sign!



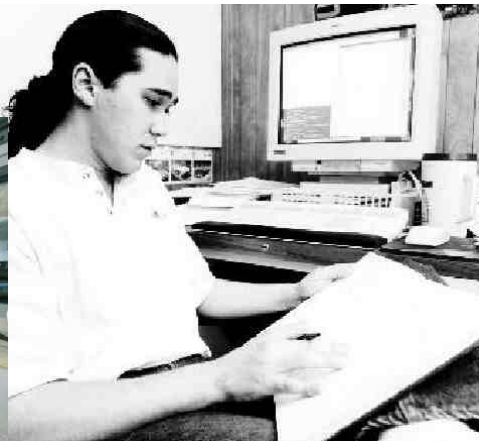
Undeniably good news

- **D0 can confirm that**
 - There are still three charged leptons
 - There are still six quarks
 - u and d, s (hyperons), $c(J/\psi, \chi_c)$, b and t
 - expected production cross section and expected decays (both top and B)
 - With expected lifetimes (B mesons)
 - Perturbative QCD works (except where we know that it doesn't - b-jets), and there is still hard diffraction
- **We have Run II results ...**
 - that are better than (other people's) published Run I results
 - that were analyzed remotely
 - that people will care about for physics reasons
 - There are no weird superjets (double tags) as seen by CDF
 - It's a shame that people care about this, but hey, who are we to complain?



It's all physics

- A vast amount of work under a lot of time pressure by a highly motivated group of people
 - As Sasha Kupco pointed out, this includes everyone: detector, operations, software, computing and analysis
 - congratulations to you all!



... but we are still learning

- Still learning a lot about our detector
 - Calorimeter performance
 - Tracking
 - B-tagging
- Need to incorporate what we learn into
 - our simulation
 - in a timely manner!
 - our reconstruction
 - AA tracking
- Still learning lessons
 - about stability of code and analyses,
 - about how long it takes to get things understood
 - about the balance between understanding performance and improving performance
 - About the need for computing resources
 - Monte Carlo generation and data reprocessing
 - Offsite computing is essential (and real) contribution

Low efficiencies
Data \neq MC



The Need to Take High Quality Data

- We accumulated a large amount of good data last fall, with high uptimes and efficiencies - but too much of the sample (20%?) was compromised in some way
- Need closer, faster and more complete Data Quality monitoring
 - In the Control Room (Pushpa's talk)
 - Offline (Stefan's talk)
 - Connecting the efforts (Tom Diehl's Coordinating role)
- Inadequate Operations support ("detector groups")
 - Good discussion at the IB
 - All agree that support of detectors, operations and close-to-detector software is a serious issue
 - We appreciate your encouragement to pursue this vigorously
 - We hear your concerns about Run IIb commitments



Run IIb

- **Good news**
 - Great progress in electrical and mechanical prototyping and design, SVX4
 - Much of the project management system is up and running
 - “Card signed the AEP” = spending authorization
- **Bad News**
 - review climate is punitive (P5)



Impact of Politics

- ... is increasing and unwelcome
 - Science politics (Fermilab and DOE)
 - P5
 - FY2004 budget
 - International politics
 - US Visas
 - DOE rules for access to Fermilab
- DO is an international experiment at a US National Laboratory: not always a comfortable position
- We can change things (there has been progress with visas) but it will be slow and it will require work: this kind of thing is not a primary concern of administrators or legislators until they are educated about the impact

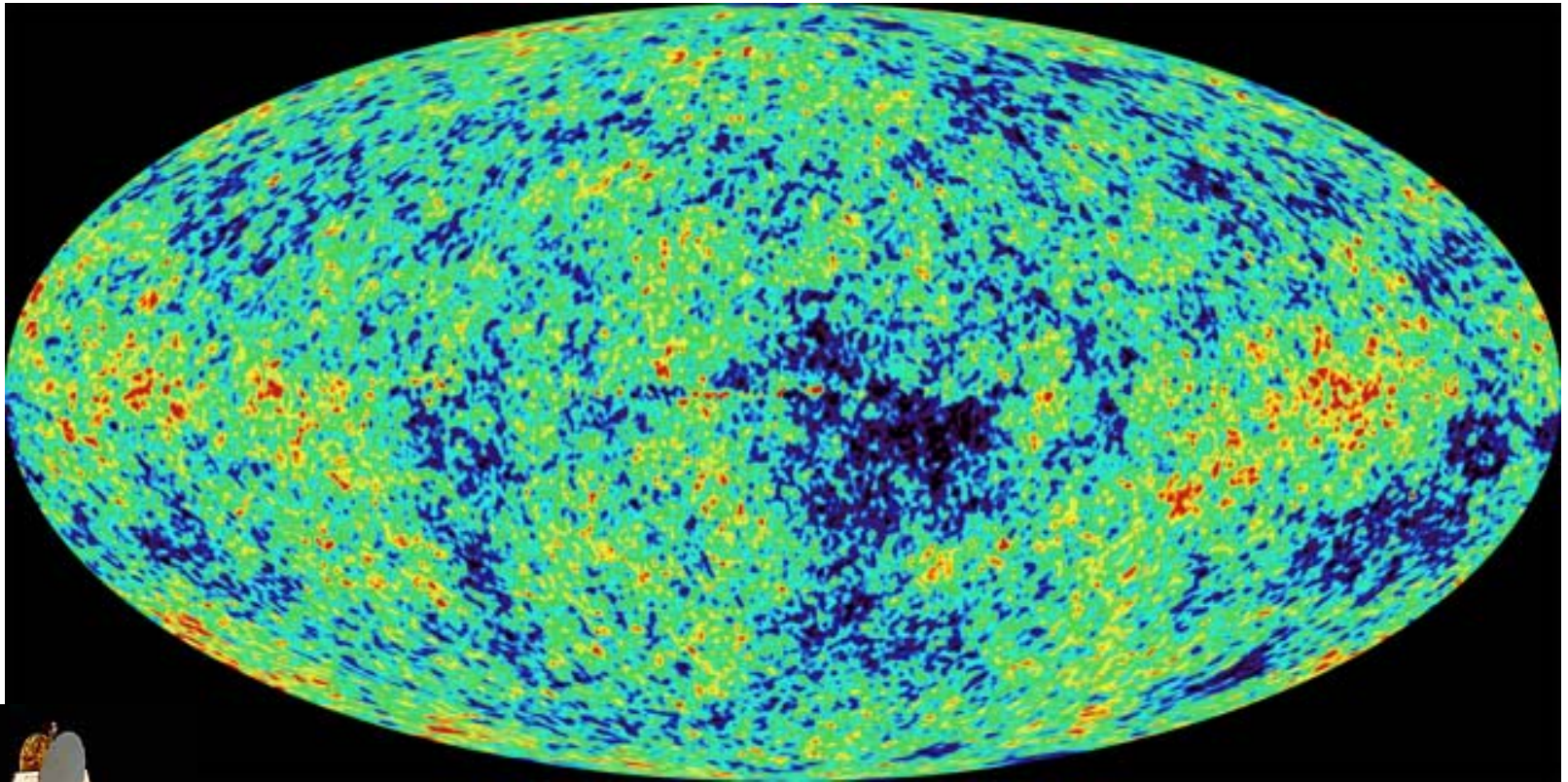


Upcoming events

- **Diffraction mini-workshop**
 - physics and detector
 - Thursday-Friday Feb 20-21
- **April Trigger Workshop**
- **D0 Summer Workshop in Beaune**
 - Web page is now online (linked from D0 calendar)



Physics “plot” of the week

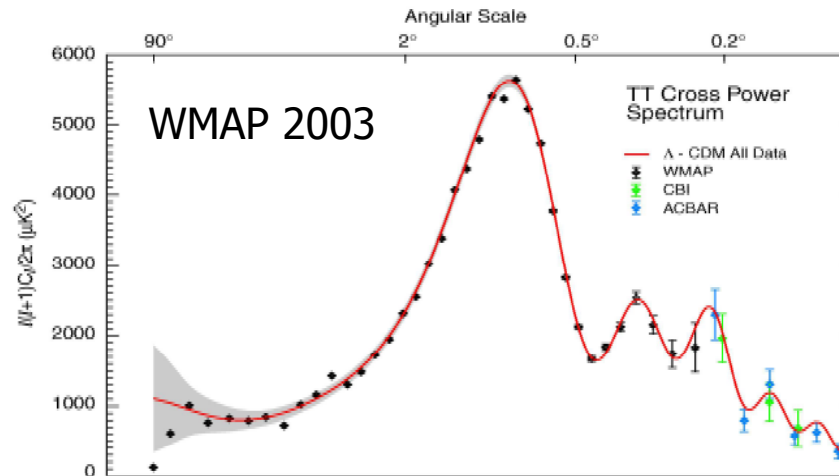


WMAP image of the cosmic microwave background

What does this have to do with DO?

Cosmic Microwave Background

- measurements of “acoustic peaks” vs. multipole number



Compare with cosmological models

- Size of DM “potential wells” into which matter fell
 - Allows matter and DM densities to be extracted
- About six to seven times more mass ($27 \pm 4\%$) than there is baryonic matter ($4.4 \pm 0.4\%$)
- new particles?
 - Weakly interacting, massive relics from the very early universe



What is Dark Matter?

- Two experimental approaches:
 - Search for dark matter particles impinging on earth
 - Try to create such particles in our accelerators

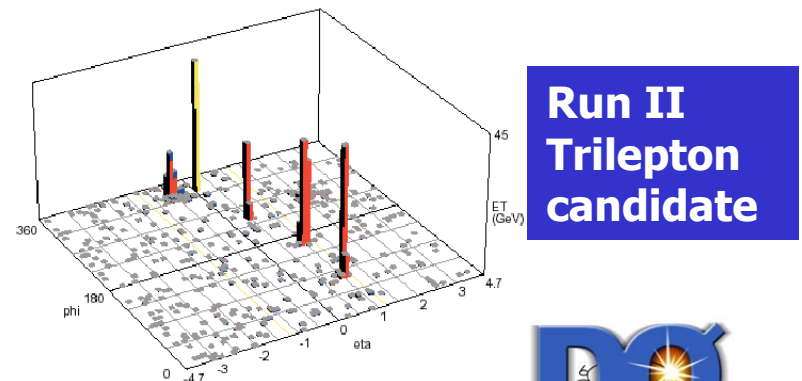
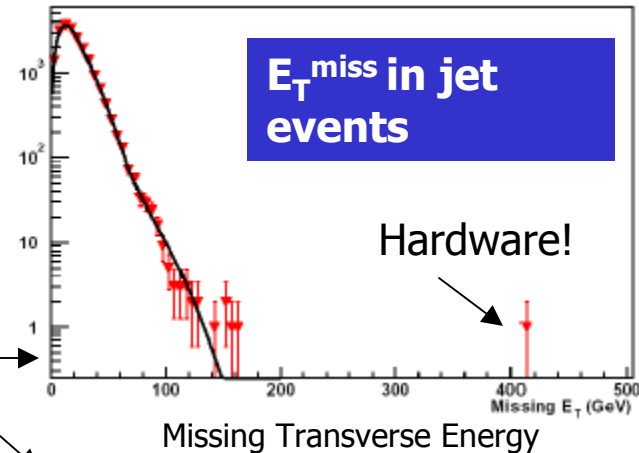
Make dark matter at the Tevatron!

Possible SUSY decay chains always end in the LSP

Detect its escape from the detector

Run II analysis has begun:

Please don't be ashamed to sell what we are doing to your physics colleagues, to the public, to your funding agencies...



We have not set ourselves an easy task

We must balance the demands of operations, computing, software, analysis, and upgrade construction

We must excel at all of them

... in a politically unfavorable environment



We do not set out to do these things because they are easy...